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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/964,992A

DATE: 07/24/2002
TIME: 14:33:57

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3 <110> APPLICANT: Saltveit, Mikal E.
             Campos, Reinaldo
     5
             Nonogaki, Hiroyuki
             Suslow, Trevor
             The Regents of the University of California
     9 <120> TITLE OF INVENTION: Characterization of Phenylalanine Ammonia-Lyase (PAL)
            Gene in Wounded Lettuce Tissue
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     12 <130> FILE REFERENCE: 023070-124500US
     14 <140> CURRENT APPLICATION NUMBER: US 09/964,992A
C--> 15 <141> CURRENT FILING DATE: 2002-07-09
     17 <150> PRIOR APPLICATION NUMBER: US 60/235,956
     18 <151> PRIOR FILING DATE: 2000-09-26
     20 <160> NUMBER OF SEQ ID NOS: 13
     22 <170> SOFTWARE: PatentIn Ver. 2.1
     24 <210> SEQ ID NO: 1
     25 <211> LENGTH: 711
    26 <212> TYPE: PRT
     27 <213> ORGANISM: Lactuca sativa
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RAW SEQUENCE LISTING DATE: 07/24/2002 PATENT APPLICATION: US/09/964,992A TIME: 14:33:57

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171 172 173 175 176 177 179 180 181 183 184 186 187 199 190 192 193 195 196 198	<213 <220 <223 <400 Met 1 Ala Glu Glu Ser 65 Glu Val	3> OF FI STATE OF STA	RGAN: EATUR THER LSPAR EQUER Ser Phe Leu 35 Arg Val Ser Glu	PRT (SM: (SM: (E: INFO L2) (CE: Thr Cys 20 Lys Lys Ala Glu Ser 100	Lact DRMAT 2 Glu 5 Val Gly Pro Ala Thr 85 Met	Met Lys Ser Val Ile 70 Ala	Glu Gly His Val 55 Ala Arg	Val Asp Leu 40 Arg Ala Ala Gly	Asp Pro 25 Asp Leu Ser Gly Thr 105	Ser 10 Leu Glu Gly Asp Val 90 Asp	His Asn Val Gly Asn 75 Lys	Gln Trp Lys Glu 60 Ala Ala	Asn Gly Arg 45 Thr Gly Ser Gly	Gly Met 30 Met Leu Val Ser Val 110	Glu 15 Ala Val Thr Lys Asp 95 Thr	Arg Ala Ala Val Val 80 Trp Thr
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171 172 173 175 176 177 179 180 181 183 184 186 187 199 190 192 193 195 196 198 199 201 202	<213 <220 <223 <400 Met 1 Ala Glu Glu Ser 65 Glu Val	3> OF FI STATE OF STA	RGAN: EATUR THER LSPAN SET Phe Leu 35 Arg Val Ser Glu Gly 115	PRT (SM: (SM: (SE: INFO (L2) (CE: Thr Cys 20 Lys Lys Ala Glu Ser 100 Ala	Lact DRMAT 2 Glu 5 Val Gly Pro Ala Thr 85 Met Thr	Met Lys Ser Val Ile 70 Ala Asn Ser	Glu Gly His Val 55 Ala Arg Lys His	Val Asp Leu 40 Arg Ala Ala Gly Arg 120	Asp Pro 25 Asp Leu Ser Gly Thr 105 Arg	Ser 10 Leu Glu Gly Asp Val 90 Asp	His Asn Val Gly Asn 75 Lys Ser Lys	Gln Trp Lys Glu 60 Ala Ala Tyr Glu	Asn Gly Arg 45 Thr Gly Ser Gly Gly 125	Gly Met 30 Met Leu Val Ser Val 110 Gly	Glu 15 Ala Val Thr Lys Asp 95 Thr	Arg Ala Ala Val Val 80 Trp Thr
171 172 173 175 176 177 179 180 181 183 184 186 187 199 190 192 193 195 196 198 199 201 202	<213 <220 <223 <400 Met 1 Ala Glu Glu Ser 65 Glu Val	3> OF STATE	RGAN: EATUR THER LSPAN SET Phe Leu 35 Arg Val Ser Glu Gly 115	PRT (SM: (SM: (SE: INFO (L2) (CE: Thr Cys 20 Lys Lys Ala Glu Ser 100 Ala	Lact DRMAT 2 Glu 5 Val Gly Pro Ala Thr 85 Met Thr	Met Lys Ser Val Ile 70 Ala Asn Ser	Glu Gly His Val 55 Ala Arg Lys His	Val Asp Leu 40 Arg Ala Ala Gly Arg 120	Asp Pro 25 Asp Leu Ser Gly Thr 105 Arg	Ser 10 Leu Glu Gly Asp Val 90 Asp	His Asn Val Gly Asn 75 Lys Ser Lys	Gln Trp Lys Glu 60 Ala Ala Tyr Glu	Asn Gly Arg 45 Thr Gly Ser Gly Gly 125	Gly Met 30 Met Leu Val Ser Val 110 Gly	Glu 15 Ala Val Thr Lys Asp 95 Thr	Arg Ala Ala Val Val 80 Trp Thr
171 172 173 175 176 177 179 180 181 183 184 186 187 199 190 192 193 195 196 198 199 201 202 204 205	<213 <220 <400 Met 1 Ala Glu Glu Ser 65 Glu Val Gly Gln	3> OH 3> OH 30	RGAN: EATUR THER LSPAR SET Phe Leu 35 Arg Val Ser Glu Gly 115 Glu	PRT (SM: (SM: (E: INFO (L2) (CE: Thr Cys 20 Lys Lys Ala Glu Ser 100 Ala Leu	Lactor DRMAS 2 Glu 5 Val Gly Pro Ala Thr 85 Met Thr	Met Lys Ser Val Ile 70 Ala Asn Ser Arg	Glu Gly His Val 55 Ala Arg Lys His Phe	Val Asp Leu 40 Arg Ala Gly Arg 120 Leu	Asp Pro 25 Asp Leu Ser Gly Thr 105 Arg	Ser 10 Leu Glu Gly Asp Val 90 Asp Thr	His Asn Val Gly Asn 75 Lys Ser Lys Gly	Gln Trp Lys Glu 60 Ala Ala Tyr Glu Ile 140	Asn Gly Arg 45 Thr Gly Ser Gly Gly 125 Phe	Gly Met 30 Met Leu Val Ser Val 110 Gly Gly	Glu 15 Ala Val Thr Lys Asp 95 Thr Ala Asn	Arg Ala Ala Val Val 80 Trp Thr Leu Gly
171 172 173 175 176 177 179 180 181 183 184 186 187 199 201 202 204 205 207 208	<pre><213 <220 <400 Met 1 Ala Glu Glu Ser 65 Glu Val Gly Gln Thr 145</pre>	3> OF STATE	RGAN: EATUR THER LSPAR SET Phe Leu 35 Arg Val Ser Glu Gly 115 Glu Ser	PRT (SM: (SE: INF() L2) (CE: Thr Cys 20 Lys Lys Ala Glu Ser 100 Ala Leu Thr	Lactor DRMAS 2 Glu 5 Val Gly Pro Ala Thr 85 Met Thr Ile His	Met Lys Ser Val Ile 70 Ala Asn Ser Arg Thr	Glu Gly His Val 55 Ala Arg Lys His Phe 135 Leu	Val Asp Leu 40 Arg Ala Ala Gly Arg 120 Leu Pro	Asp Pro 25 Asp Leu Ser Gly Thr 105 Arg Asn	Ser 10 Leu Glu Gly Asp Val 90 Asp Thr Ala	His Asn Val Gly Asn 75 Lys Ser Lys Gly Ala 155	Gln Trp Lys Glu 60 Ala Ala Tyr Glu Ile 140 Thr	Asn Gly Arg 45 Thr Gly Ser Gly Gly 125 Phe Arg	Gly Met 30 Met Leu Val Ser Val 110 Gly Gly Ala	Glu 15 Ala Val Thr Lys Asp 95 Thr Ala Asn	Arg Ala Ala Val Val 80 Trp Thr Leu Gly Met 160
171 172 173 175 176 177 179 180 181 183 184 186 187 199 201 202 204 205 207 208	<pre><213 <220 <400 Met 1 Ala Glu Glu Ser 65 Glu Val Gly Gln Thr 145</pre>	3> OH 3> OH 3> OH 3> OH 3> OH 6H 6H 6H 6H 6H 6H 6H 6H 6H 6	RGAN: EATUR THER LSPAR SET Phe Leu 35 Arg Val Ser Glu Gly 115 Glu Ser	PRT (SM: (SE: INF() L2) (CE: Thr Cys 20 Lys Lys Ala Glu Ser 100 Ala Leu Thr	Lactor DRMAS 2 Glu 5 Val Gly Pro Ala Thr 85 Met Thr Ile His	Met Lys Ser Val Ile 70 Ala Asn Ser Arg Thr	Glu Gly His Val 55 Ala Arg Lys His Phe 135 Leu	Val Asp Leu 40 Arg Ala Ala Gly Arg 120 Leu Pro	Asp Pro 25 Asp Leu Ser Gly Thr 105 Arg Asn	Ser 10 Leu Glu Gly Asp Val 90 Asp Thr Ala	His Asn Val Gly Asn 75 Lys Ser Lys Gly Ala 155	Gln Trp Lys Glu 60 Ala Ala Tyr Glu Ile 140 Thr	Asn Gly Arg 45 Thr Gly Ser Gly Gly 125 Phe Arg	Gly Met 30 Met Leu Val Ser Val 110 Gly Gly Ala	Glu 15 Ala Val Thr Lys Asp 95 Thr Ala Asn	Arg Ala Ala Val Val 80 Trp Thr Leu Gly Met 160

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/964,992A

DATE: 07/24/2002 TIME: 14:33:57

Input Set : A:\Uco-1245.app

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217			195					200					205	_	_	
	Leu		Tyr	Ile	Ala	Gly		Leu	Thr	Gly	Arg		Asn	Ser	Lys	Ala
220		210	_	m1	a 1	a 1	215	T		. 1 -	a 1	220	3]	Dh.a	21.	<i>α</i> 1
		GIY	Pro	Thr	GLY	230	Val	Leu	Asn	Ата	235	гàг	Ala	Phe	Ala	240
	225	C111	Wal	Glu	C1v		Dho	Dho	Clu	T.O.II		Pro	Lve	Glu	Gly	
226	мта	СТУ	vaı	Giu	245	Gry	rne	rne	Giu	250	GIII	110	цуз	Olu	255	пса
	Δla	Leu	Va l	Asn		Thr	Ala	Val	Glv		Glv	Met.	Ala	Ser	Met	Val
229		200		260	011				265		1			270		
	Leu	Phe	Asp	Ala	Asn	Val	Leu	Ala	Leu	Leu	Ser	Glu	Val	Leu	Ser	Ala
232			275					280					285			
234	Ile	Phe	Ala	Glu	Val	Met	Gln	Gly	Lys	Pro	Glu	Phe	Thr	Asp	His	Leu
235		290					295					300				
		His	Lys	Leu	Lys		His	Pro	Gly	Gln		Glu	Ala	Ala	Ala	
	305		_	_ 3	_	310	~ 3		_	_	315	. .			a1	320
	Met	Glu	Tyr	He		Asp	GIY	ser	Asp		vaı	Lys	Ата	Ата	Gln 335	Lys
241	17-1	TI i o	<i>c</i> 1	Wat	325	Dro	LOU	Cln	Lvc	330 Bro	Two	Cln	N an	λrα	Tyr	λla
243	Val	HIS	GIU	340	ASP	PIO	Leu	GIII	345	PIO	гуз	GIII	кър	350	1 7 1	AIG
	Leu	Ara	Thr		Pro	Gln	Trp	Leu		Pro	Gln	Ile	Glu		Ile	Ara
247	Lea	*** 9	355	202				360	1				365			,
	Ser	Ser	Thr	Lys	Met	Ile	Glu	Arg	Glu	Ile	Asn	Ser	Val	Asn	Asp	Asn
250		370		_			375					380				
252	Pro	Leu	Ile	Asp	Val	Ser	Arg	Asn	Lys	Ala		His	Gly	Gly	Asn	Phe
	385					390					395				_	400
	Gln	Gly	Thr	Pro		Gly	Val	Ser	Met		Asn	Thr	Arg	Leu	Ala	Ile
256	. 1 .	- 1 -	- 1 -	a1	405	T	11 a h	Db =	3 1 n	410	Dha	Com	<i>C</i> 1	T 0.11	415	N a n
258 259	Ala	Ala	шe	420	Lys	Leu	мет	Phe	425	GIII	Pne	ser	GIU	430	Val	ASII
	Asn	Dhe	Tur		Agn	Glv	T.eu	Pro		Asn	Leu	Ser	Glv		Arg	Asn
262	пор	1110	435	11511	11511	O I I	Dea	440	001	11011	Dou	001	445	011	5	
	Pro	Ser		Asp	Tyr	Gly	Phe	Lys	Gly	Ala	Glu	Ile	Ala	Met	Ala	Ser
265		450		-	-	_	455	_	_			460				
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	Gln	Ser	Ala	Glu		His	Asn	Gln	Asp		Asn	Ser	Leu	Gly	Leu	Ile
271	_		_	_	485		~ 1	~		490	-1	T	.	.	495	0
	Ser	Ala	Arg		Thr	Ala	Glu	Ser		Glu	He	Leu	Lys		Met	ser
274	The	mh ∽	m	500	1/01	א ז ה	Lou	Cuc	505	Cor	Tlo	λan	Lou	510	uic	Lou
276	1111,	1111,	515	ьeu	val	нта	ьeu	520	GIII	Ser	116	ush	525	Ary	His	Leu
	Glu	Glu		Leu	Lvs	Ser	Thr		Lvs	Asn	Thr	Val		Leu	Val	Ala
280	014	530			-15		535		_15		-	540				
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RAW SEQUENCE LISTINGPATENT APPLICATION: **US/09/964,992A**DATE: 07/24/2002

TIME: 14:33:57

Input Set : A:\Uco-1245.app

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291 Leu Arg Gln Val Ile Val Asp His Ala Leu Asn Asn Glu Asn Asp Ala
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                                                     605
            595
294 Gly Thr Ser Ile Phe Gln Lys Ile Ser Glu Phe Glu Glu Glu Leu Lys
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297 Ala Val Leu Pro Lys Glu Val Glu Gly Val Arg Ser Ala Tyr Glu Ser
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                                             635
298 625
300 Ser Thr Leu Thr Ile Pro Asn Arg Ile Lys Glu Cys Arg Ser Tyr Pro
                    645
                                         650
                                                             655
301
303 Leu Tyr Arg Phe Val Arg Glu Glu Leu Gly Thr Gly Phe Leu Thr Gly
304
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                                     665
306 Glu Glu Val Thr Ser Pro Gly Glu Glu Phe Asp Lys Val Phe Thr Ala
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312 Trp Asn Gly Val Pro Leu Pro Ile Ser
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333 ggagaacggt aatcacgtta atggagtcgt taatgagttg tgcatcaagg atccattgaa 180
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RAW SEQUENCE LISTING ERROR SUMMARY PATENT APPLICATION: US/09/964,992A

DATE: 07/24/2002 TIME: 14:33:58

Input Set : A:\Uco-1245.app

Output Set: N:\CRF3\07242002\1964992A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:6; N Pos. 6,9
Seq#:7; N Pos. 12,15

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/964,992A

DATE: 07/24/2002

TIME: 14:33:58

Input Set : A:\Uco-1245.app

Output Set: N:\CRF3\07242002\I964992A.raw

L:15 M:271 C: Current Filing Date differs, Replaced Current Filing Date

L:582 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:0 L:600 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:0 L:613 M:259 W: Allowed number of lines exceeded, <223> Other Information:

L:630 M:259 W: Allowed number of lines exceeded, <223> Other Information:

L:631 M:259 W: Allowed number of lines exceeded, <223> Other Information: